Ludlam (R)

THE

RELATIONS

OF

MORBID ANATOMY

TO

PRACTICAL MEDICINE.

BEING THE CLOSING LECTURE OF THE COURSE UPON PHYSIOLOGY AND PATHOLOGY IN THE HAHNEMANN MEDICAL COLLEGE FOR THE

Session of 1860—61.

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MORBID ANATOMY

AND

ITS RELATIONS TO PRACTICAL MEDICINE.

By R. Ludlam, M. D.

Gentlemen:—I have deemed it an appropriate *finale* to my course of lectures upon physiology and pathology to direct your attention to the importance of morbid anatomy as related to practical medicine.

You will remember the remark which was made at the commencement of the term, that a knowledge of physiology implied an acquaintance with anatomy. Now the relation existing between these two branches is the precise counterpart of that which connects morbid anatomy with pathology. What the healthy anatomy of the organic solids and fluids is to physiology the morbid anatomy of these same solids and fluids is to pathology. And, if it be impossible to comprehend the compass and variety of healthy normal function in these textures and juices without an intimate acquaintance with the mode and manner of their individual organization, so, likewise, is it impossible fully to understand all the especial and delicate features of functional and organic disorder which these textures and juices may present without a minute examination into and knowledge of their morbid anatomy.

It is for this reason, therefore, that I recommend you to study the lessons of this latter science. I am aware that its details are forbidding to some; that, under the pretence of its impracticality, many physicians, so called, shrink from its more intimate acquaintance; that, by a species of sophistical

reasoning, some are inclined to regard the search by the scalpel and kindred means, since these cannot reveal us the hidden intangible causes of disease, as teaching just nothing at all. But I must insist upon it, gentlemen, that there is no better excuse to be offered for the physician's ignorance of morbid anatomy than for the physiologist's or the surgeon's want of familiarity with the healthy machinery of the human body.

It is much easier to criticize the morbid picture photographed within the *cadaver* than to set one's-self about perfecting the lineaments and legacy of diseased processes left us therein as a sort of professional inheritance. Nor shall we find a sufficient apology for apathy and indifference in the fact that the larger share of these morbid records, as viewed after death, are the fruits of over-medication. If a patient dies from an over-dose of Opium, which has been unwittingly ad ministered, shall we neglect a *post-mortem* for this cause alone? Do we not rather, as homœopathists, claim to be in search of information regarding disease arising from whatever source?

In discussing the value of a knowledge of morbid anatomy to the practical physician I have four distinct propositions on the subject to maintain:

I. *Morbid anatomy may be studied both during the life of the patient and after its close.*

II. *As a science it is not designed to reveal the* CAUSES, *but rather the* CONSEQUENCES *of diseased action.*

III. *It affords the only reliable key to the boundaries of special disease, and hence has contributed more than all other agencies to the perfection of differential diagnosis.*

IV. *These views of its value do not necessarily conflict with the theory of the dynamic or the immaterial origin of disease.*

I. *Morbid anatomy may be studied both during the life of the patient and after its close.*

There is a prevalent impression entertained by the medical community that the details of this science, like those of a man's last will and testament, are to be esteemed as sacred

until about so many hours have elapsed after the breath has left his body. This we need scarcely pause to characterize as ridiculous in the extreme.

Think, for a moment, what multiplied means of diagnosis are afforded the physician of the present day. The physical exploration of the chest in diseases of the lungs and heart; the use of the microscope as a means of detecting perversions of structure and of secretion, from whatever source; the ophthalmoscope as the indicator of textural disorders of the visual organs; the laryngoscope, which permits the eye of the inquiring physician to explore the organ of the voice and its entire neighborhood; and the specula of various kinds, which offer the most direct testimony of morbid alterations in the anatomy of the several outlets of the body. All these, and many beside, are his *ante-mortem* instrumentalities for the study of pathological anatomy.

II. *As a science it is not designed to reveal the causes, but rather the consequences of diseased action.*

When it is said that the search for morbid sequelæ with the scalpel has been fruitless, because it has not revealed us the cause of the disease with which the patient died, and which revelation should conform to the careful record of his symptoms while yet living, you may be pretty certain that one of two things is true: either that the speaker is somewhat of a medical skeptic, or that, when he says "the cause of the *disease*," he means the cause of the *death*.

Here is a manifest difference in terms. The skeptic may prefer to reject all knowledge of a lesion until he knows its legitimate source. He may decline to prescribe for a patient suffering with the simplest ailment until he reasons out the wherefore of the disease under which that patient is laboring. He may tell you that *post-mortem* examinations have proved of very little service, for the reason that they do not indicate the precise ætiology of intermittent or typhoid fevers, for example. But what of all this? And how long, think you, would one wait to prescribe if he did not anticipate a clear knowledge of the causes of the cholera, diphtheria, rheuma-

tism, or of intermittent or typhoid fever? What man among us is familiar with the ultimate sources of these ailments?

Suppose, for example, a *post-mortem* shall reveal the gall-bladder filled with gall-stones. This fact would furnish a key to the suffering in an *ante-mortem* hepatic colic; but there is scarcely a physician to be found who would look upon these concretions as affording an explanation of the ultimate pathological changes upon which their formation has depended. The discovery of a tuberculous deposit in the lungs may serve to explain the symptomatology of phthisis-pulmonalis, but will leave its ætiology as much an enigma as before. An ulceration of Peyer's patches may constitute the essential distinguishing feature in the diagnosis of enteric or typhoid fever, but affords no solution of its cause.

Thus much being granted, I beg you will remember that the careful inspection of the body after death, with a view to mark its pathological disclosures, is designed more as an aid to diagnosis than to ætiology. We inspect a *cadaver* to learn the changes in structure and function that have resulted from diseased processes of one species or another, and not to discover the original cause of the disorder itself. That cause may have been an immaterial, intangible agent, whose effects alone are observable through the media of our senses. In this we are not doubting that these results do of necessity spring from a cause, and that such agencies may sometimes be known and recognized; but would simply question if there is one anatomist in forty who claims or who believes it possible to unravel a *post-mortem* record back to its original source, so as to identify the cause or causes that have produced these fatal results.

We are careful also to draw very close distinctions upon the living subject between papular and vesicular diseases, for example. We need never confound a case of eczyma with one of erysipelas. The variola and rubeola are known, in our day, as two separate and distinct diseases. Now there is nothing known of the ultimate causes of these ailments beyond that which was equally familiar to the ancients. And there is nothing so characteristic in their symptomatology, as experienced by the patient, or expressed by him, as to lead you

to found a correct diagnosis upon these subjective phenomena alone. In order, therefore, to discriminate between the different varieties of cutaneous disorder you are not to rely so much upon the sensations or impressions of the patient (for these may mislead you most wofully) as upon the evident disorganization or change which has been established in the textures themselves. It is by this means that you are to diagnose a simple rash from a papular disorder, a papular from a vesicular eruption, or a vesicle from a pustule.

Here the detailed morbid anatomy of the parts implicated is called into requisition. And this, not as promising or furnishing an explanation of its source, but simply as illustrating the fact that peculiar, intangible, epidemic influences may produce results upon the periphery of the body which are analogous to such as accompany diseased processes occurring in the penetralia of the system. The peculiar force, whatever that may be, whose disturbance is the root of the disease in question, manifests its abnormality through a lesion of the cutaneous textures. And by a most natural process of development a disordered function soon merges into a disordered organization.

The sensations which distinguish an apoplectic seizure are not of themselves sufficient to satisfy the inquiring mind of the physician as regards the identical cause of the attack. Its nature, also, will need to be understood. The fit may blot out the life of the patient by a congestion of inky venous blood, or blast the nerve-centres by paralysis, and the changes which are threatened are none the less significant than is a knowledge of the agencies by which they may be brought about. The symptoms will have need to be ratified in the particular lesion of substance which may result.

Here is a threatened invasion of the home and centre of nervous influence. The brain personates the presiding intelligence, the animating genius of the organism. Its whole mental magazine is at the mercy of diseased forces, and, for its protection and safety, we should learn its vulnerable points, and how to repair the damages which either have or may yet befal it.

III. *This science affords the only reliable key to the boundaries of special disease, and hence has contributed more than all other agencies to the perfection of differential diagnosis.*

I have taken occasion, during the course of lectures but just now completed, to exhibit to you, in the field of the microscope, the healthy histological anatomy of every structure found in the body. This has been done for the purpose of affording you an adequate idea of their variety, as well as of their marvellous adaptation to the performance of normal physiological functions. You are therefore cognizant of the fact that the organism which they represent has been fashioned with the most consummate skill.

Let us suppose that either of the more highly vitalized of these textures is become the seat of disease. There will result an abnormal disturbance of function. Organic or sympathetic derangements follow, and from this source will arise the minutiæ of a morbid symptomatology. The original cause of this perturbation in function, and of the embarrassment of organic movement, whether material or otherwise, acts and operates, spends its force upon these delicate structures, and writes its record upon them also. From the little pimple of acne to a pulsating aneurism a morbid condition of system implies a pathological imprint upon each structure involved by the disease in question.

And, as the photographic plate has no election of objects which it copies with such wonderful precision, but transfers as well the meaner as the more charming of them, so the delicate textures of our bodies are found to copy and transmit the peculiar features of special diseases. These are the tablets upon which are engraven the details of disease, the consequences of disorder. We may read, or we may gainsay the record; still the fact is self-evident that, to arrive at a correct understanding of pathological processes, we must become familiar with the minutiæ of morbid anatomy. He who is ignorant of this latter science does not deserve the name of physician.

If we reflect for a moment upon the services which pathologico-anatomical observations have rendered to practical me-

dicine I am confident there will be less disposition to question their claim to a place in the *curriculum* of our studies. Take, for example, pneumonia. To employ the excellent phrase of Harvey, "What is its medical anatomy?" First there is pulmonary engorgement, and then follows an effusion of plasma, to the relief of the congested capillaries and the solidification of the lobule. This constitutes the second stage, or that of red hepatization, in which the spongioles are found to be impervious to atmospheric air, and each miniature lung, each lobule, must perform its work by proxy, if it be performed at all. After this, and in due time, the third stage, or that of gray hepatization, follows. The latter looks to the destruction, liquefaction, and excretion of the abnormal tissue with the expectoration. And, finally, the reparative cell-therapeutics, which is to restore the integrity of structure and function in the pulmonary mucous membrane, in order that hæmatosis may proceed uninteruptedly, is reestablished.

This is a general outline of the morbid anatomy of pneumonia, and you will readily apprehend that a knowledge thereof must be in every way desirable for the physician who would treat it understandingly. It was the lack of such information as its pathological anatomy affords which once led to its extreme fatality at the hands of the empirical school. It is the growing familiarity with the details of this science, and especially as related to cell-therapeutics, which has rendered the expectant method so proper and popular in its treatment, and which, through the advocacy of such men as Bennett and Todd, is saving thousands upon thousands of valuable lives.

In diseases of the heart the same proposition holds good, that, were it not for the teachings of morbid anatomy, we should be in utter ignorance of their differential diagnosis. A clear conception of the physiological functions of this organ, of its mechanism, of the phenomena which characterize its every pulsation, its sounds, its movements, its impulse, pre-supposes and is based upon an intimate acquaintance with its healthy anatomy. If, therefore, we encounter disorders involving its texture or function, or both these

together—for the heart is liable to every form and result of inflammation, excepting gangrene, as well as to various derangements in regard of its motility—we can no more expect, in a simple diagnostical point of view, to comprehend the significance of its pathology, without the study of its medical anatomy, than we can know its physiology while yet in ignorance of its normal anatomy.

You will remember my remark, when speaking of valvular diseases of the heart, that, in forming a correct diagnosis and prognosis of a case in question, it is of the greatest practical moment to settle these two points: 1. Are the murmurs of *organic* origin? 2. Are the vital and physical conditions of the muscular parietes of the heart in every way normal? If you can answer these inquiries satisfactorily, your end is gained. The case is thenceforth as clear as possible to your mind. In all this, therefore, will be found another direct reference to the available lessons of pathological anatomy.

If auscultation over the region of the aortic valves shall disclose the physical signs of a permanent patency of those structures,—if the first sound of the heart shall be normal, but the second sound replaced by a murmur, which is audible along the course of the aorta and its primitive branches,—you will recognize a physical inadequacy of these valves which prevents their complete closure, and which is the unmistakeable source of the difficulty. It is a knowledge of morbid anatomy of these structures which alone is capable of interpreting the phenomena presented. One moment's intercourse through your ear with this mechanism will be of more value, in the light of diagnosis, than a catalogue of quasi-symptoms of the length of the Mississippi!

Without a familiarity with the healthy structure and function of the semi-lunar valves, whose sudden closure is the source of the second sound of the heart, it would be impossible to explain the physiological origin of this sound. And without an acquaintance with the fact that structural changes may prevent their adequate closure upon the column of blood in its exit into the systemic circulation, it would be equally impossible to comprehend or to explain the substitution of this second sound by a murmur which is audible even along

the course of the aorta, and which is the token of disturbance in that precise locality. In such an example the murmur indicates an organic change of structure, and, if permanent, will afford the criteria upon which you are to found an unfavorable prognosis. And this is the hinge upon which your verdict is to turn,—that the *souffle* is of *organic* origin, indicating a morbid perversion of structure and of function in these same semi-lunar valves.

Suppose, by physical exploration, you shall discover signs which lead to the diagnosis of an isolated or uncomplicated disease of the auriculo-ventricular valves of the left side of the heart. The first sound is rendered abnormally. Now you will remember the fact that Kölliker, Andry, Dalton, and others, teach that this first sound is produced alone by the closure of these mitral valves. If, therefore, your ear shall detect a permanent murmur involving this first sound only, and which is audible in the vicinity of the mitral valves, and so along toward the apex of the heart—never along the course of the aorta, and which does not in any manner implicate the second sound—you will at once be led to the inference of some anatomical or organic disorder or entanglement, either in the valves themselves, or in the chordæ tendiniæ by which they are stayed and strengthened.

Nor will the result be different should you prefer the more commonly accepted explanation of the sources of the first sound of the heart. This phenomena may be due to the impulse of this organ against the walls of the thorax, to the sound emitted by muscular contraction, or to the collision of the current against the orifices of the great vessels; but, in this case also, the auricular evidence of its being so radically disordered would testify that the physical and vital conditions of the heart were not in every way normal.

And thus it is that both theories of the sources of this first sound in a healthy state would lead to the recognition of a morbid lesion of structure as characteristic of this particular disease.

The reference to a *materies morbi*, circulating in the blood as the most probable origin of the symptomatology of rheumatism, implies a pathological perversion of its anatomical

and physiological composition and properties. And there is as veritable a recognition of morbid anatomy in the use of this phrase, and the adoption of this theory, in regard of its ultimate nature, as is had by the surgeon when he exhibits you an anchyclosed joint, or by the obstetrician whenever he diagnoses a case of prolapsus uteri.

There is no single department of practical medicine which possesses a greater degree of interest to us than the physiology and pathology of the urinary system. The importance of the depurating function to the health of the economy has long since been recognized by the profession; but it was not until a comparatively recent date that its pathology was unfolded and its lessons incorporated into our literature. In the diagnosis of Bright's disease of the kidneys, of puerperal eclampsia, as well as of other varieties of eclampsia having their source in uræmic poisoning, and of diabetes mellitus, we must acknowledge our indebtedness to the science which explains and has made available their medical anatomy.

And thus we might prosecute the subject to an almost indefinite extent. This must suffice, however, to illustrate my third proposition, that morbid anatomy affords the only reliable key to the boundaries of special disease, and hence has contributed more than all other agencies to the perfection of differential diagnosis.

IV. *These views do not conflict with the theory of the dynamic or the immaterial origin of disease.*

In the whole range of medical literature there is, perhaps, no subject which has been so effectually be-written as that which argues the immaterial origin of most diseases. Taking it as granted, therefore, that, like the mind, the body also is capable of receiving impressions for good or ill from sources which are intangible, we need not enter upon a defence of the doctrine. There can be no question in regard of its validity.

In support of this fourth argument for the science we are advocating, the principal fact to be borne in mind is, that diseased influences, dynamic and imponderable as they frequently are, in order that their effects may be cognizant to our

senses, *must operate through and upon some tangible media.* These media are found in the elements which compose the animal tissues and fluids—in the anatomy of our bodies.

When, therefore, we address ourselves to the study of the phenomena resulting from the operation of these intangible agencies—their nature, intricacies, and significance—as comprised in the details of special pathology, our success in learning the qualities and characteristics of abnormal processes will square with our knowledge of their pathological anatomy.

We judge of the pecularities and properties of every variety of natural force by their consequences in action upon something of a material nature. The physicist may declare them but modifications of a single original force, which by this means is adapted to the multiplied uses of Providence; but, whether in unison or separately, they all act upon, and operate mediately through the matter which is appreciable to our senses. Precisely thus is it with the dynamic sources of disease. There may be one, or one thousand of them—we do not know their number. They may all be co-relative, and the same cause of disturbance in the normal equilibrium of parts suffice to the production, in the one case, of pneumonia, in another of phrenitis, in one person of rheumatism, and in another of some renal embarrassment. Or a specific force may always be requisite to summon an individual disorder into existence; and yet the case is not changed, for the *consequences* only are recorded, and these in a morbid perversion of the textures and juices which have been more especially implicated in the diseased action.

The rule does not hold good that, because you are recommended to familiarize yourselves with the minutiæ of morbid anatomy, you are therefore counselled into a material recognition of disease as involving its crude and material causes and consequences alone. Not at all. As well might we question the existence of heat as one of the great forces of nature, because it will persist in hiding itself away in certain bodies which lie around, and from whence it can be withdrawn only upon certain chemical and tangible conditions. You are the rather to reason back from the effect to the cause. The inductive method promises more than any other. The

chemist will analyze a ray of light—another intangible force—into its constituent colors by the careful employment of a prism. The pathologist's means for the analysis of the hidden forces which create disease, as well as of their results, lie in his eye, his ear, his scalpel, and his microscope. If you would become familiar with disease-producing agencies you must strive to be able to translate their recorded effects; for, until this point is gained, it is not possible that one can be deemed competent to represent at once the science and the art of medicine in such a manner as to render them most available to the cure of disease.

Upon serious reflection it is astonishing to what extent we shall discover that the medical world is dependent for its knowledge of disease upon the teachings of this peculiar science. From the more simple of all in the catalogue of cutaneous eruptions, to the more subtle disorders of nervous agency, or of that primitive force which stamps the impress of infirmity and suffering as hereditary to every child of Adam, the ills which we battle are manifested through derangements of structure or function, or both these, in order that they may appeal to our senses for relief. And it is upon a classification of these phenomena, an available rendering of all the knowledge which is being recorded in the morbid anatomy of the textures and fluids, that medicine proper must ever depend for her elevation to the dignity of a science.

Gentlemen, I recommend you to cultivate an acquaintance with pathological anatomy. You should prosecute its study after leaving this school, and through the remainder of your lives. And by this counsel I do not insist that you "run the thing into the ground." Dead men *do* tell tales and divulge secrets, which, while living, they could not voluntarily disclose. You may learn much from *post-mortem* examinations, but more from *ante-mortem* study and analysis. The mouth of the patient, your own eye, and ear, and scalpel, and microscope, are the means which have been placed in your hands by Providence for the prosecution of this species of research. See to it, therefore, that your talents are not hidden in a napkin.

Judging from the modern developments of this science, you who are about entering upon your professional career, will

need a broader outlook than we who have preceded you. The mind is capable of great achievement, and, if you shall concentrate its energies in this direction, it will be impossible to estimate the service you shall render to medicine and to mankind.

In all this I would not undervalue the therapeutics of our school of practice. I would not ignore the lessons of the art of medicine, and its more recent adaptation to the relief of suffering and disease. I defer to no one in my admiration for the homœopathic system, as taught in the Hahnemann Medical College, and to whose kind benefactions my own patients are daily debtors; but, while revering the art, I cannot forswear my allegiance to the science we preach and should practice.

Nor does it matter that there be those who opine that the value of morbid anatomy is a species of myth, of no practical service as a handmaid of the healing art. Liebnitz denounced the law of gravitation as "atheistic," but that did not make infidels of those who received it.

The physician can have no more plausible reason for accepting the tenets, and advocating the study of the art, to the exclusion of the science of medicine, than has the physicist for proclaiming the acceptance of the law of chemical affinity to be orthodox while the like endorsement of the law of gravitation is "atheistical." As perfection in manhood implies a proper development and correspondence of the physical, the mental, and the moral qualities of the individual, so the model physician is he whose measure of culture and training in one branch of the calling is properly adjusted to that of the remainder. A one-sided doctor is a deformity!

But I will desist from a further tax upon your time and patience. To-morrow those of you who constitute the first Graduating Class of this College are to be formally invested with all the rights and privileges which pertain to the doctorate in medicine. To my most heartfelt thanks, therefore, for the measure of long-suffering and forbearance which it has pleased you to exercise towards my efforts to serve you, I may add a sincere desire for your personal and professional welfare.

I would that you may ever exhibit that decision of character, that earnestness of purpose, and that spirit of determination which is the sure guarantee of success in life. And, if my last words on this occasion might linger with you, I should implore you to remember that—

> "The wise and active conquer difficulties
> By daring to attempt them; sloth and folly
> Shiver and sink at sights of toil and hazard,
> And *make* the impossibility they fear."